

THE ORCHIDACEAE OF A SERIES OF SWAMPS IN
SOUTHERN VERMONT.

A. LEROY ANDREWS.

A DEEP cut in the Green Mountain range of southwestern Vermont furnishes an interesting study for the botanist. The floor of this little valley, which extends over a length of some six or eight miles from the vicinity of Pownal, is comparatively uniform in level and the drainage system is therefore sluggish and broken up for the most part into a series of ponds, swamps and bogs, presenting very diversified conditions of plant-growth. Springs of clear, cold water from the sides of the steeply overhanging mountains help to furnish the conditions so favorable to many members of the fastidious family of the *Orchidaceae*. A few facts gathered from a careful exploration of this region may be of interest to the student of the environment and distribution of our Orchids.

The representative species appearing uniformly throughout all the swamps is *Cypripedium spectabile*. Specimens of the pure white form of this species are frequently seen. A swamp of deep black mud, overgrown with trees of ordinary deciduous species, and traversed by cold streams furnishes also *C. pubescens* and gigantic specimens of *Habenaria hyperborea*. The occurrence of *Microstylis monophyllos* in this swamp is interesting as one of the more southerly stations of this plant in New England and from the fact that it has not been hitherto reported from this vicinity.

A wet meadow near by, also traversed by cold brooks, is in proper season empurpled and richly perfumed by abundant spikes of *Habenaria psycodes* interspersed with vigorous specimens of *H. lacera*. Here also occurs, as might be expected, what is very apparently a natural hybrid between these two species, of which I may speak more at length at some subsequent time. This same meadow furnishes a single dense clump of *H. virescens*.

A series of peat-bogs farther on, however, present the most interesting conditions and reward the botanist most richly. These bogs are mostly bare of trees, some of the firmer portions, however, being covered by a sparse growth of young tamaracks. Here in May or early June may be found quantities of *Arethusa bulbosa*, while later appear *Calopogon pulchellus* and *Pogonia ophioglossoides* in the greatest profusion, in charming contrast with the pure white, richly fragrant spikes

of *Habenaria dilatata*. Still later comes *Spiranthes Romanzoffiana*. The occurrence of this last species is especially noteworthy as being one of the extreme southern stations of this plant in New England, only a few miles from the Massachusetts line. In the higher portions of these swamps *Cypripedium acaule* grows abundantly.

Possibly a further examination of these places will yield one or two more species of Orchids. At any rate the locality is one of great interest not merely to the Orchidologist, but particularly to the student of the *Cyperaceae* and in fact to the plant-enthusiast generally.

CRITICAL NOTES ON THE NEW ENGLAND SPECIES OF LAMINARIA.

WILLIAM ALBERT SETCHELL.

THE species of the genus *Laminaria* have been much studied, especially on the western and northern shores of Europe, and much has been done to reduce the numerous and puzzling forms within certain and recognizable specific limits. While this has been fairly well accomplished for the European species, those of the rest of the world are still in need of more study in the laboratory and the field. Particularly is this true for the forms inhabiting the coast of New England, and the regions adjacent both to the North and to the South. De la Pylaie (1824 and 1829) and Harvey (1852) have given accounts of the species of this general region, and Farlow (1881) has revised, as far as possible, these older accounts, and incorporated the additional knowledge up to that time. Farlow states, however, that he must necessarily be content "with a superficial account of the perplexing forms of this exasperating genus," since he was unable to make use of the notes furnished him on the American forms by European correspondents. Since then, however, the Scandinavian algologists have worked over their species very carefully, and Foslie, in particular, has published (1884) a detailed and illustrated account of the Norwegian species. The writer intends to follow this account rather closely in the notes on the New England species given below.

The writer began his study of the *Laminariæ* in the fall of 1887, while a graduate student at Harvard University, the topic being suggested to him by Professor Farlow. From that time until the fall of 1895, this with other topics among the *Laminariaceæ*, continued to